RESEARCH PROJECT

BRAIN-BASED EDUCATION STRATEGIES TO ENHANCE STUDENTS ACHIEVEMENT

By

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ABSTRACT

In this research project, numerous studies show that brain-based research findings such as the importance of safe environments, the effect of emotions on learning, the use of multisensory practices and differentiated teaching practice, the process of sense making and the importance of planning for meeting special needs help teachers optimize learning for all children. Brain development begins at birth and the brain remains capable of complex changes throughout the lifespan. The way teachers set up their classroom environment can impact student achievement. Educators will benefit from knowledge in the basic sciences related to brain function and development. Educators will want to be aware of advances in brain research and know how to implement effective instructional strategies supported by research.

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**CHAPTER 1: INTRODUCTION**

**Background**

As a new teacher going into the field of education as an educator I feel it is important to know different strategies to help enhance student learning and achievement. I was in a classroom last year in which the classroom environment was average and common. I have always been interested and intrigued in brain-based strategies and implementing them into the classroom to enhance children’s achievement. The colors, smells and the way a classroom is set-up strongly effects how the children learn. We as educators need to be reminded that the brain is involved in everything we do. This is a very powerful thing to remember and we as teachers need to be knowledgeable on the different strategies that can optimize learning for all children.

**Significance of this Study**

“Brain-based education is best understood in three words: engagement, strategies, and principles. Brain- based education is the engagement of strategies based on principles derived from an understanding of the brain.” (Jensen, 2008) The brain is involved in everything we do, which means it is involved in everything we do in school. This makes this topic crucial for educators to understand the power of knowing how to implement brain-based strategies into their classrooms. Our goal as educators is to educate all students. Brain-based education is about the professionalism of knowing why one strategy is used instead of another. (Jensen, 2008).

Kids want to learn and it is our job as teachers to make that possible. Every child has an innate desire to explore and create; no matter the race, size, background or socioeconomic status. The years from birth to around the age of ten are considered the most important for acquiring and retaining knowledge. John Bauer (1999) stated in his article, *In search of brain based education*, that, “ there is a critical or sensitive period in brain development, lasting until a child is around 10 years old, during which children learn faster, easier, and with more meaning than at any other time in their lives.” This is important for educators to be knowledgeable on so that we can optimize learning at those ‘critical’ times.

**Statement of the Problem**

The purpose of this project is to look at how the brain works and to find strategies that teachers can use while they teach to help enhance student learning and achievement. As educators we need to know when learning happens and how to use specific strategies at the right time.

**Research Questions**

1. How does the brain work?

2. What is Brain-based education?

3. What are the benefits for educators of using Brain-based education?

4. How does enhancing the visual environment enhance student learning?

5. How emotions affect learning?

6. How can brain-based education enhance student achievement; test scores, student motivation and relationships?

**Possible Limitations**

Limitations for this study could include the teacher and specific students in the classroom. Before teachers begin to integrate positive changes in the learning environment, negative influences in the learning environment must be changed or removed. So depending on the environment if unnecessary stress is present, brain-based practices will be less successful. In this case, the benefits of brain-based education would not be as great for those students. According to Jensen (1998) there is substantial evidence to suggest that negative types of stress can prohibit learning and such stress causes “fight or flight”. (Am I on the right track with this? I would like your feedback please.)

**Definitions of Terminology**

***Brain-Based learning-*** is a comprehensive approach to instruction based on how current research in neuroscience suggests our brain learns naturally. This theory is based on what we currently know about the actual structure and function of the human brain at varying stages of development. This type of education provides a biologically driven framework for teaching and learning, and helps explain recurring learning behaviors. It is a meta-concept that includes and eclectic mix of techniques. Currently, these techniques stress allowing teachers to connect learning to studentsï¿½ real life experiences. This form of learning also encompasses such educational concepts as: mastery learning, learning styles, multiple intelligences, cooperative learning, practical simulations, experiential learning, problem-based learning, movement education**.**

**Evidence Indicating Program Success**

I will use data from research findings that support my thesis statement and that answer my research questions.

**CHAPTER 2: REVIEW OF LITERATURE**

**Introduction**

In the past ten years brain research has gained credibility, funding and attention. Brain-based education uses research in neuroscience on how the brain works to gain an understanding of how students learn and develop in a classroom. The brain is involved intimately in everything educators and student’s do at school. (Jensen, 2008) According to Zadina (2004), the goals for studying brain research include: reaching as many children as possible, teaching to individual differences, diversifying teaching strategies, and maximizing the brain’s natural leaning process. Using brain-based education within the elementary classroom can enhance and optimize student achievement.

Through a careful review of literature, this chapter will provide an overview of the benefits of implementing brain-based education into elementary classrooms. This will include six sections: how does the brain work, what is brain based education, what are the benefits for educators of using brain-based education, how does enhancing the visual environment enhance student learning, how emotions effect learning, and how brain-based education can enhance student achievement.

*How does the brain work?*

New brain-based research challenges the notion that genes determine intelligence. The early years when neural connections are made are the most crucial in regards to acquiring new information. John Bauer (1999) stated in his article, *In search of brain based education*, that, “ there is a critical or sensitive period in brain development, lasting until a child is around 10 years old, during which children learn faster, easier, and with more meaning than at any other time in their lives.” This is important for educators to be knowledgeable on so that we can optimize learning at those ‘critical’ times.

*What is brain based education?*

According to the National Education Association, “there are four main principles of brain-based learning: Millions of patterns in the brain form from huge amounts of input. Millions of programs in the brain result from learning by doing. Feedback fine-tunes the brain’s patterns and programs; and Students who feel safe and secure can learn more than those who don’t.

Brain-based education is the “engagement of strategies based on principles derived from an understanding of the brain.” (Jensen, 2008) As educators we need to know why we are doing what we are doing. This makes it essential to know how the brain works for us to be educators that optimize learning. Brain-based education has grown immensely over the years. The first generation was known as “brain basics” in which it focused on establishing a vocabulary with which to understand the new knowledge. Today the knowledge is coming from a set of brain-related disciplines, that if the research has to do at all with the brain it is then ‘brain-based’. We all know the brain is involved in everything we do. “The current model of brain-based education is highly interdisciplinary.”(Jensen, 2008) Today we know that brain-based learning is not found within neuroscience; but that a multidisciplinary approach is the way to attain it.

Schools present numerous opportunities to affect student’s brains on a daily basis. “Stress, exercise, nutrition, and social conditions are all relevant, brain-based issues that affect cognition, attention, classroom discipline, attendance, and memory.” (Jensen, 2008) Once we understand that each school day changes their brain in some way we as educators can decide how to prioritize policies and strategies to optimize learning.

“With brain-based instruction, teachers immerse children in a variety of hands-on and problem-solving experiences, which engage their brains more fully than simply reading textbooks out loud.” (NEA) Hands- on learning is crucial to making neural connections that will be crucial throughout life. A safe learning environment is essential for children to reach their potential.

*What are the benefits for educators of using Brain-based education?*

Today, the brain is being looked to for answers my many educators. The role of the brain and the influence of classroom groupings, lunchroom foods, school architecture, mandated curriculum, and state assessments are all related. “Each of them affects the brain, and our brain affects each of them.” (Jensen, 2008) It is important to remember that schools, assessment, environments and instruction are not bound by one discipline, such as cognitive science, but by multiple disciplines. The partnership between the brain and the environment is something that will ensure a successful school. It is when the brains in the schools are not working that a school will start to suffer.

One of the benefits that educators will find with the use of brain-based education is the fulfillment of knowing that they have the knowledge to best help their students succeed. They know what strategy to use and when to use the specific strategies.

Educators that use brain-based strategies within their classroom will build trust and a safe environment for kids.

Brain-based education provides the opportunity for children to have meaningful first-hand experiences. “Student’s won’t understand the vast Pacific Ocean if they don’t first understand the pond in their back yard.” (Pedersen, NAE)

*How does enhancing the visual environment enhance student learning?*

Pleasant smells can improve cognitive functioning. (Wilmes, 2008) Enriching student learning through using sensory strategies in a brain-based environment is one of the easiest and most rewarding was for an instructor to begin to improve the learning environment and academic outcomes for all children!

*How emotions affect learning?*

As an educator the way that you start the day and sequence the daily activities plays a role in the emotions of your students. Emotions affect memory and brain function. When a person feels content, the brain releases endorphins that enhance memory skills (Jensen, 2005) There are many strategies related to brain-based education that correlate to emotions being an effective tool in the classroom.

*How can brain-based education enhance student achievement; test scores, student motivation and relationships?*

*Conclusion*

Today educators are more informed professionals on the topic of brain-based education. There is still criticism but instead of the sounds of a loud chorus now it is more of a soft whine. Research concludes that incorporating brain related instruction in classrooms costs little in terms of money; it does require creativity, planning and time. “A growing understanding of the way the brain functions offers new insights into the minds of students at all stages of development.” (Madrazo and Motz, 2005) The benefits of Brain-based education are what we as educators must keep in mind when deciding whether to implement it or not. The one sure thing we know is that, “our brain is involved with everything we do! The brain is the most relevant feature to explore, because it affects every strategy, action, behavior, and policy at your school.”

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